

Module 4: Getting Ready: Scoping the RI/FS

- This section discusses scoping, which is the first step in the RI/FS. Scoping includes planning for data collection and review, site planning, and other initial steps of the RI/FS process.
- Key references include:
 - *Remedial Investigation/ Feasibility Study (RI/FS): Process, Elements, and Techniques Guidance*, DOE/EH--94007658, December 1993.
 - *Getting Ready: Scoping the RI/FS*, EPA, Directive 9355.3-01FS1, November 1989.
 - *Data Quality Objectives for Remedial Response Activities*, EPA, March 1987.

Module Objectives

- ❑ Explain the purpose of the scoping phase of the RI/FS
- ❑ Identify existing data which can support RI/FS scoping, and evaluate its usefulness
- ❑ Given sources, release mechanisms, pathways, and receptor data for the site, develop a basic conceptual site model
- ❑ List when limited field investigation would be appropriate to support RI/FS scoping
- ❑ Explain how EPA Superfund program expectations impact DOE RI/FS projects
- ❑ Define data quality objectives and explain their importance to data collection planning
- ❑ List the typical contents of an RI/FS project plan
- ❑ List EPA recommendations for improved RI/FS planning

Scoping Activities

- ❑ Initial process of RI/FS
 - Repeated as needed throughout (for other operable units)
- ❑ Establish site objectives
- ❑ Implement site management strategy
 - Site boundaries
 - Sequence
 - Operable units
- ❑ Implement any OU strategies, such as use of a phased approach

3

- The RI/FS is a flexible process that should be tailored to the specific circumstances of individual sites.
- The Project Manager's central responsibility is to determine how best to use this flexibility to conduct an efficient and effective RI/FS that achieves high-quality results in a timely and cost-effective manner.
- In the development of the specific project scope, the objectives of the RI/FS must be balanced with time and resource constraints.
- At DOE, prior site planning has often already identified priority areas for investigation and divided the site into operable units. Scoping then focuses on planning activities for the operable unit and coordinating information with other on-going activities.

Scoping Activities (cont'd)

- ❑ Evaluate existing data
 - Use previous surveys, documents
- ❑ Involve federal, state regulators
- ❑ Develop conceptual site model
- ❑ Identify management strategy, likely response scenarios, and remedial action objectives
- ❑ Initiate potential state/federal ARARS identification
- ❑ Identify initial data quality objectives (DQOs)
- ❑ Prepare project plans

4

- Each of these activities is described in the remainder of this section.

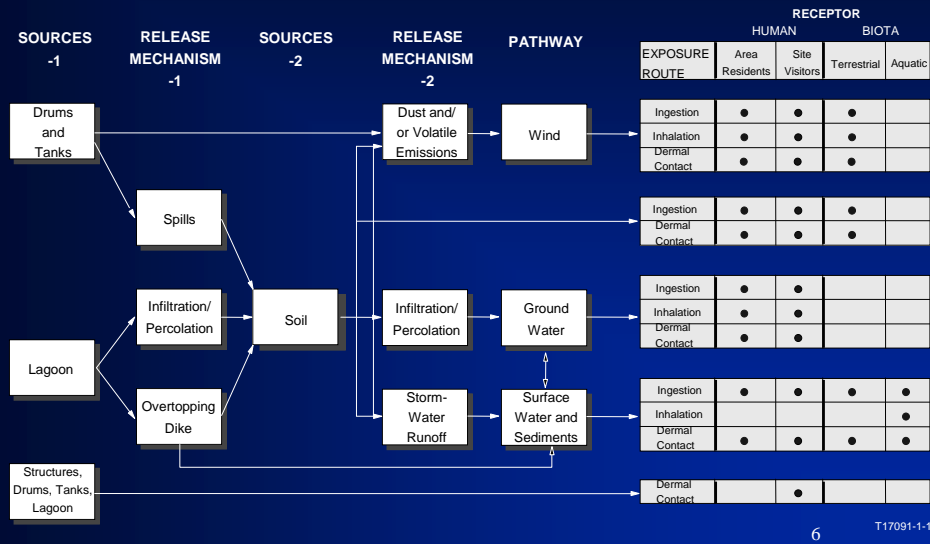
Evaluate Existing Data

- ❑ Identify types of existing data
- ❑ Identify sources of existing data
- ❑ Use of existing data helps to:
 - Establish physical characteristics of the site
 - Develop conceptual site model
 - Determine additional data needs
 - Avoid duplication of previous efforts
 - Focus RI/FS
 - Worker health and safety planning

5

- What are you looking for?
 - Data that can be used in the RI/FS (saving money by avoiding re-collection)
 - Data that can direct and help plan how to conduct the RI/FS
 - Data that can assist in your preliminary technology and ARARs screening activities
 - Data to help initiate your conceptual understanding of the site
- Types of existing data:
 - Data pertaining to activities, operations, processes, and hazardous substance used
 - Data pertaining to past waste management and disposal practices
 - Data relating to the types and quantities of hazardous substances present in the environment, including previous sampling results
 - Data pertaining to environmental site conditions and migration potential
 - Demographic and land-use information
 - Historical and aerial photography
- Data gathered during the NPL listing process should also be evaluated. These data may be located in files maintained by DOE, EPA Regional offices, contractors, and the State.
- A key step in the evaluation of existing data is the determination of its quality and usability. This is important to establish whether sampling will be needed to verify or supplement existing data.
- Existing data do not have to be of sufficient quality to make final decisions, but they may be helpful in developing a conceptual understanding of the site dynamics.
- Evaluating existing data helps to determine additional data needs. Data are needed to:
 - Characterize the site to the extent necessary to support subsequent decisions
 - Define the risk posed by the site
 - Identify viable remedial action alternatives
 - Identify applicable or relevant and appropriate requirements
 - Evaluate the need for treatability studies

Develop Conceptual Site Model



- The conceptual site model is used to:
 - Develop a general understanding of the site to evaluate potential risks to human health and the environment
 - Assist in identifying and setting priorities for the activities to be conducted at the site
- The conceptual site model may look like the chart shown above, or it may be a pictorial representation (see *Getting Ready: Scoping the RI/FS* fact sheet).
- The conceptual site model identifies:
 - Potential sources of contamination
 - Types of contaminants and affected media
 - Release mechanisms and potential contaminant pathways
 - Actual and potential human and environmental receptors
- The model is updated and verified as you proceed with the RI.

Limited Investigations

- ❑ Conduct if available data are not sufficient to scope the project adequately
- ❑ Limited to easily obtainable data where results can be gathered in a short time
 - Geophysical survey
 - Sampling and analysis of existing wells
 - Well-water level measurements
 - Air monitoring
 - Site mapping

7

- Conducting limited field investigations will help to streamline the process by providing as much information as possible up front to scope the project adequately.
- The RI section of this course will identify types of techniques that may be appropriate.

Site Management Planning

Based on Existing Information and Conceptual Site Model:

- ❑ Identify initial remediation priorities and appropriate implementation sequence to address site problems
 - Operable units
 - Early/interim actions
- ❑ Identify appropriate scope and detail of studies needed to define site problem
- ❑ Identify potential remedial technologies and need for treatability studies

8

- Much of the overall site management planning may also occur as part of the Federal Facility Agreement development process.
- Consider administrative needs:
 - Data storage and retrieval
 - Contracting
 - Security and access
- Large sites should be remedied in operable units
 - When early actions are necessary or appropriate to reduce significant risks quickly
 - When phased analysis or response is necessary or appropriate given the site's location and complexity
 - To expedite the completion of total site cleanup
- The site management strategy is not a formal submittal, but it must be reviewed with key decisionmakers to get concurrence. Federal Facility Agreements often will require interim concurrence steps; such as workplans.

Program Expectations

- ❑ Focus on the protection of human health and the environment through a variety of methods
- ❑ Are to be considered and utilized during scoping and will influence the establishment of remedial action objectives and potential remedial alternatives

9

- When developing the preliminary list of remedial action alternatives, site managers should consider the EPA Superfund program expectations established in the NCP and the types of response actions selected or other sites with similar problems or contaminants.
- The Superfund Program developed a goal and a number of expectations about the types of remedial actions that would be expected to be taken at sites. These expectations are a part of the NCP. They should be considered and utilized during scoping and will influence the establishment of remedial action objectives and potential remedial alternatives (55 FR 8702; NCP §300.430(a)(1)).

Program Expectations (cont'd)

- ❑ Treatment of principal threats will be used, wherever practicable; principal threats may include liquids and highly mobile or highly toxic materials
- ❑ Engineering controls may be used for waste that poses a low long-term threat, or where treatment is impracticable
- ❑ Institutional controls, such as deed restrictions, will be used to mitigate short-term impacts or to supplement engineering controls; they will not serve as a sole remedy unless active response measures are impracticable

10

- The program expectation for liquid materials with high organic concentrations is treatment with proper management of residuals.
- Low levels of organics in large volumes of soil could be consolidated and managed to prevent further releases.
- Specific situations that may limit the use of treatment include sites where:
 - ▶ Treatment technologies are not technically feasible or are not available within a reasonable timeframe
 - ▶ The extraordinary size or complexity of a site makes implementation of treatment technologies impracticable
 - ▶ Implementation of a treatment-based remedy would result in greater overall risk to human health and the environment due to risks posed to workers or the surrounding community during implementation
 - ▶ Severe effects across environmental media resulting from implementation would occur

Program Expectations (cont'd)

- ❑ Remedies will often combine treatment of principal threats with engineering and institutional controls for treatment residuals and untreated waste
- ❑ Innovative technologies should be considered if they offer the potential for comparable or superior treatment performance, fewer/lesser adverse impacts, or lower costs for a similar level of performance than demonstrated technologies
- ❑ Ground water will be returned to its beneficial uses within a timeframe that is reasonable, where practicable

11

- *Example of a combination of treatment and engineering and institutional controls:* Incineration of highly toxic waste followed by solidification and disposal of residuals; capping of low toxicity wastes; and deed restrictions on the site.
- Innovative technologies may be critical to DOE's remediations. We will discuss innovative technologies in more detail in subsequent sections.

Initiate ARAR Identification

- ❑ DOE should work with lead and support agencies to initiate identification process early in process
- ❑ Initial focus on chemical- and location-specific requirements and presence of RCRA-regulated waste

12

- There are three types of ARARS:
 - ▶ **Chemical-Specific** -- Those that place a health- or risk-based limit on the amount of a given chemical that can be discharged or present in the environment (MCL)
 - ▶ **Location-Specific** -- Restrictions against certain kinds of actions in some locations because the location is somehow special (wetlands)
 - ▶ **Action-Specific** -- Technology-based; either place restrictions on or establish directions for specific types of remedial or waste management activities (closure)
- In addition to Federal ARARS, more stringent State ARARS must be identified.
- ARAR identification is progressive. ARARS are not finally determined at this stage. During other steps of the RI/FS process (e.g., site characterization), ARARS will be refined.
- ARARS are discussed in detail in a later section of this course.

Develop Data Quality Objectives (DQOs)

- ❑ Assure all data needs are identified in project scoping
- ❑ Type and quality of data needed based on intended use of data
- ❑ 7-step DQO process developed by EPA's Quality Assurance Management Staff

13

- Site managers should initiate logistics planning once data needs are identified. For example, procurement of sampling equipment during scoping may be necessary as well as making arrangements with the appropriate laboratory because of backlog.
- DQOs are data maps -- how much, of what quality, for what use?
- EPA has developed a seven-step DQO process. The seven steps are:
 - State the problem
 - Identify the decision
 - Identify inputs affecting the decision
 - Specify the domain of decision
 - Develop a logic statement
 - Establish constraints on uncertainty
 - Optimize design for obtaining data
- *Guidance for Data Quality Objectives Process*. U.S. EPA, 1994.

Prepare Project Plans

Typical Project Planning Deliverables Include:

- ❑ **Work plan (WP)**
 - **Should also address management of investigation-derived waste**
- ❑ **Sampling and analysis plan (SAP)**
 - **Field Sampling Plan (FSP)**
 - **Quality Assurance Project Plan (QAPP)**
- ❑ **Health and safety plan (HASP)**
- ❑ **Community relations plan (CRP)**

14

- The work plan documents decisions and evaluations made during scoping. It should include a comprehensive description of work to be performed, including methodologies to be utilized and rationale for performing required activities.
- The work plan should include management options for investigation-derived waste (IDW) (e.g., if IDW will be managed on or off site, if it will be returned to the source).
- The SAP is prepared to ensure that sample collection activities are conducted in accordance with technically acceptable protocols and that the data meet the DQOs established during scoping.
 - ▶ The FSP defines data-gathering methods that will be used on the project.
 - ▶ The QAPP describes project objectives and QA/QC protocols that will be used to achieve desired DQOs.
- The HSP supports scoping activities and must conform to the standard Health and Safety program and be in compliance with OSHA regulations and protocols.
- The CRP documents the history of community relations and issues of community concern. It describes the objectives of community relations activities and how these objectives will be met.

Communication During Scoping

- ❑ DOE, EPA, and the state meet to discuss site management strategy
- ❑ DOE initiates discussion of ARARs with EPA and the state
- ❑ DOE prepares work plan, working closely with EPA and the state
- ❑ DOE and EPA begin dialogue with community to develop community relations plan and notifies community of completed project plans

Improved Project Planning

EPA Recommendations:

- ❑ Increase use of existing data, particularly site inspection data
- ❑ Conduct limited investigation, when appropriate
- ❑ Incorporate technical advisory committee review into project planning phase
- ❑ Integrate DQOs into planning process

16

- These recommendations were developed through a combination of program experience and a series of RI/FS improvement initiatives. Contractor staff and regional EPA personnel assisted in the recommendation development.
- Incorporating technical advisory committee review into project planning improves the quality of documents and identifies technical and policy issues early in the process.

Improved Project Planning

EPA Recommendations (cont'd)

- ❑ Use RI/FS 14 standardized tasks - listed in Appendix B of guidance
- ❑ Consolidate planning documents/incorporate standard procedures by reference
- ❑ Communicate on regular basis with all involved parties to reach early consensus on project approach

Module Summary

- ❑ The purpose of scoping is to plan for data collection and review, site planning and other initial steps of the RI/FS process
- ❑ Scoping activities include
 - Evaluating existing data
 - Involve federal, state regulators
 - Develop conceptual site model
 - Identify management strategy, likely response scenarios, and remedial action objectives
 - Initiate potential state/federal ARARs identification
 - Identify initial data quality objectives (DQOs)
 - Prepare project plans

Module Summary (con't)

- ❑ Scoping activities must focus on meeting program expectations as these activities will influence the establishment of remedial action objectives and potential remedial actions
- ❑ DQOs are data maps that assure all data needs are identified during project scoping